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EXAMINER

CHANG, RICK KILTAE

ART UNIT

PAPER NUMBER

3729

DATE MAILED: 07/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/665,034

Applicant(s)

CARAPPELLA ET AL.

Examiner

Rick K. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 13-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 23 May 2002 is: a) ☐ approved b) ☒ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, a gold on the copper (claim 19, line 5) and steps shown in claim 30 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. Fig. 4 shows one layer devoted to two layers 44 and 46. There should be another layer showing 46, the gold layer.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on January 3, 2002 have been disapproved because they introduce new matter into the drawings. 37 CFR 1.121(a)(6) states that no amendment may introduce new matter into the disclosure of an application. The original disclosure does not support the showing of the different layers of bonding pads from the conductive strips 44 and 46. Fig. 7 is an alternative embodiment of the invention. The description in the specification regarding Figs. 1 and 4 do not support this new feature.

3. The proposed drawing correction filed on 5/23/02 has been disapproved because it is not in the form of a pen-and-ink sketch showing changes in red ink or with the changes otherwise highlighted. See MPEP § 608.02(v).

### ***Specification***

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4. The amendment filed January 3, 2002 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material in Pages 7-9 which is not supported by the original disclosure. The following are new matter, for example: "different layers of", "As shown in Figure 1 . . . bond shelf 18" and "to connect to a bonding pad 16". Further, Fig. 4 shows 44 and 46 are on different sides, not on top of one another. Applicant is required to cancel the new matter in the reply to this Office Action.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 18 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The disclosure, as originally filed, fails to provide support for "masking all surfaces except for the edge of the bond shelf". Figs. do not shown masking IC, PCB, bond wires, etc.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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The limitation "masking all surfaces except for the edge of the bond shelf" renders the claim vague and indefinite. It is unclear which one of the shelf has this feature. Further, it is unclear which edge the claim limitation is referring to, since all the edges are masked. Is all surfaces inclusive of IC, bond wires, PCB, etc.?

NOTE: No art rejections have been applied to the claims 18-20 since there are a great deal of confusion and uncertainty as to the proper interpretation of the limitations of claims. Therefore, it would not be proper to reject such claims on the basis of prior art. See MPEP 2173.06.

***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 13 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Arai et al (US 5,206,986).

Arai discloses forming a housing with a bond pad located on a bond shelf (Fig. 1 shows a die 26 with conductive wires extending to conductive pads on the shelf, which are better shown in cover page of the subject patent); forming a conductive strip (58 on at the edge of 50 facing 26); and removing a portion of the conductive strip (Fig. 4); and mounting an IC and connecting the IC to the bond pad (Fig. 18).

***Claim Rejections - 35 USC § 103***

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11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 14-15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al (US 5,206,986) in view of Sebesta (US 6,014,809).

Aria fails to disclose plating the conductive strip and drilling a portion of the bond shelf.

Sebesta discloses plating the conductive strip (col. 3, line 51) thereby forming bonding pads.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Aria by plating the conductive strip, as taught by Sebesta, for the purpose of forming bonding pads.

At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to drill or etch the through holes (64) because Applicants have not disclosed that drilling or etching the portion of the bond shelf provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with punching, laser ablating, etc. because it would provide the same result. Therefore, it would have been an obvious matter of design choice to modify Aria to obtain the invention as specified in claims 15 and 17.

13. Claims 21-24 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayama et al (US 5,877,553) in view of Sebesta (US 6,014,809).

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Re claim 21: Nakayama discloses providing a package housing having a plurality of bonding pads (22b and 24b), a first conductive strip (Fig. 2 shows a plurality of conductive strips 21-24), and a first bond shelf (where 22 lies).

Nakayama fails to disclose wrapping the first conductive strip around the edge to a first conductor.

Sebesta discloses wrapping a conductive strip around the edge to a conductor located below the strip (Figs. 4-5 and 6 and col. 1, lines 24-25 wherein adjacent component is another circuit card shown in Fig. 4 located below) thereby eliminating plated through holes for communication between two substrates.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nakayama by wrapping a conductive strip around the edge to a conductor located below the strip, as taught by Sebesta, for the purpose of eliminating plated through holes for communication between two substrates.

Re claim 22: Nakayama fails to disclose plating a conductive material.

Sebesta discloses plating a conductive material (col. 3, line 51) thereby forming conductive pads.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nakayama by plating a conductive material, as taught by Sebesta, for the purpose of forming conductive pads.

Re claim 23: Nakayama discloses that line 21 is a power bus.

Re claim 24: Nakayama discloses a routing trace 22.

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Re claim 27: Nakayama fails to disclose an etching method is used to remove the portion of the first strip.

At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to etch away the first strip because Applicants have not disclosed that etching provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicants' invention to perform equally well with punching, laser ablating, etc. because it would provide the same result. Therefore, it would have been an obvious matter of design choice to modify Nakayama to obtain the invention as specified in claim 27.

14. Claims 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayama et al (US 5,877,553)/Sebesta (US 6,014,809) as applied to claim 21 above, and further in view of Official Notice.

Nakayama/Sebesta fail to disclose a drilling method is used to remove a portion of the first shelf to form a notch.

Japp discloses laser drilling a portion of the first shelf to form a notch (Fig. 3) thereby forming multiple conductors.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nakayama/Sebesta by drilling a portion of the first shelf to form a notch, as taught by Japp, for the purpose of forming multiple conductors.

At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to drill a portion of the shelf because Applicants have not disclosed that drilling the portion of the bond shelf provides an advantage, is used for a



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particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicants' invention to perform equally well with punching, laser ablating, etc. because it would provide the same result. Therefore, it would have been an obvious matter of design choice to modify Nakayama/Sebesta to obtain the invention as specified in claims 25-26.

15. Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayama et al (US 5,877,553)/Sebesta (US 6,014,809) as applied to claim 21 above, and further in view of Lee (US 5,089,878).

Nakayama/Sebesta disclose a first conductor (22).

Nakayama/Sebesta fail to disclose that the substrates are dielectric material and the second conductive layer is etched.

Lee discloses that the substrates are dielectric material (16 and 52) thereby electrically isolating the conductors.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nakayama/Sebesta by providing dielectric material for the substrates, as taught by Lee, for the purpose of electrically isolating the conductors.

At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to etch the second conductive layer because Applicants have not disclosed that etching provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicants' invention to perform equally well with punching, laser ablating, etc.

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because it would provide the same result. Therefore, it would have been an obvious matter of design choice to modify Nakayama to obtain the invention as specified in claim 28.

16. Claims 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayama et al (US 5,877,553)/Sebesta (US 6,014,809)/Lee (US 5,089,878) as applied to claims 21 and 28 above, and further in view of and Hamzehdoost et al (US 5,491,362).

Nakayama/Sebesta teaches the invention as shown above. Nakayama/Sebesta disclose forming the second conductors, a second plurality of bonding pads located on a second bond shelf having a second edge (Figs. 1-2), and a third substrate (2). Sebesta discloses wrapping a conductive strip around the edge to a conductor located below the strip (Figs. 4-5 and 6 and col. 1, lines 24-25 wherein adjacent component is another circuit card shown in Fig. 4 located below). Further, Sebesta discloses plating the conductive layers. Lee discloses that the substrates are dielectric material (16 and 52).

Nakayama/Sebesta/Lee fail to disclose forming a third conductive layer on a third dielectric substrate and etching the second and third conductive layer. Further, Nakayama/Sebesta/Lee fail to disclose that the second conductor is a power bus or a routing trace.

Hamzehdoost discloses forming a third conductive layer (226a and 224a) on a third substrate thereby allowing the IC die to communicate with other components.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nakayama/Sebesta/Lee by forming a third conductive layer on a third dielectric substrate, as taught by Hamzehdoost, for the purpose of electrically isolating the conductors and allowing the IC die to communicate with other components.

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At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to etch the second and third conductive layer because Applicants have not disclosed that etching provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicants' invention to perform equally well with punching, laser ablating, etc. because it would provide the same result. Therefore, it would have been an obvious matter of design choice to modify Nakayama/Sebesta/Lee/Hamzehdoost to obtain the invention as specified in claim 30.

Further, at the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to make the second conductor as a power bus or a routing trace because Applicants have not disclosed that making the second conductor as a power bus or a routing trace provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicants' invention to perform equally well with making the second conductor as a ground bus and other conductors as a power bus or a routing trace because the end result of producing the package is the same. Therefore, it would have been an obvious matter of design choice to modify Nakayama/Sebesta/Lee/Hamzehdoost to obtain the invention as specified in claims 33-34.

### ***Response to Arguments***

17. Applicant's arguments filed 5/23/02 have been fully considered but they are not persuasive.

Re the Arai reference, Examiner has included the subject reference in PTO-892.

Examiner maintains 35 USC 112, first and second paragraphs, rejection, as noted above.

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Re claims 21-24 and 27 arguments, Examiner considered the applicants request and clarified the Nakayama reference, which are obvious from the reference. As to Sebesta reference is concerned, the examiner already provided all the support in the rejection.

Re the Jepp reference, Examiner overlooked the reference date. However, Examiner gave a design choice rejection. Furthermore, the claimed subject matter is notoriously old and well known in the art. The rejection is maintained.

### ***Conclusion***

18. Applicants are duly reminded that a full and proper response to this Office Action that includes any amendment to the claims and specification of the application as originally filed requires that the applicant point out the support for any amendment made to the disclosure, including the claims. See 37 CFR 1.111 and MPEP 2163.06.

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

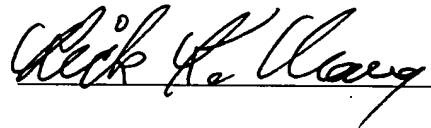
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick K. Chang whose telephone number is (703) 308-4784. The examiner can normally be reached on 5:30 AM to 1:30 PM.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9302 for regular communications and (703) 872-9303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1148.

A handwritten signature in black ink, appearing to read "Rick K. Chang", written over a horizontal line.

**RICHARD CHANG  
PRIMARY EXAMINER**

RC  
July 29, 2002